Yulun Wu
PhD Candidate in Geography, University of Ottawa
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Education

2020-2024 **PhD in Geography** **10/10**
University of Ottawa, Ottawa, ON, Canada / Agriculture and Agri-Food Canada
Thesis: *Modelling and Correcting for the Adjacency Effect in Remote Sensing of Coastal and Inland Waters*
Supervisors: Dr. Anders Jensen Knudby
Committee members: Dr. David Lapen, Dr. Chuiqing Zeng, Dr. Michael Sawada

2021-2021 **Exchange Student, Department of Physics** **4/4**
University of Toronto, Toronto, ON, Canada
Term project: *Atmospheric Impacts of Wildfires and Aerosol Plumes: Two Case Studies Using TROPOMI UVAI*
Adviser: Dr. Kaley Walker

2014-2019 **Honours Bachelor of Science in Environmental Science** **8.68/10**
University of Ottawa, Ottawa, ON, Canada
Honours Thesis: *The spatial distribution of arsenic and other trace metal contaminants and their acute toxicity to Daphnia pulex in lakes near the Giant Mine in Yellowknife, Canada*
Supervisor: Dr. Jules M. Blais

Research Experience

January 2020 - Present
PhD Student, University of Ottawa, Ottawa, Canada

- Explore the challenges in aquatic remote sensing over small waterbodies such as rivers and small lakes. This includes studying the adjacency effect from nearby land and atmospheric scattering as well as sun-glint induced by wind and turbulence.
- Develop a Python-based Monte Carlo code that models the radiative transfer in an atmosphere-ocean-land system and corrects for the adjacency effect for coastal remote sensing; implement surface reflectance models such as water's specular reflection following Cox-and-Munk slope statistics.
- Calibrate a dual-channel Jaz UV/visible spectrometer in measuring water's remote sensing reflectance following the skylight-blocked approach (SBA); collect water reflectance and constituent data using spectrometers and a YSI EXO sonde.
- Monitor agriculture-related water quality changes in rivers of Eastern Ontario using high-resolution satellite imagery including Sentinel-2 MSI, Worldview and PlanetScope.
- Assess the accuracy of satellite-derived water reflectance from atmospheric-correction tools such as L2Gen, Sen2Cor and ACOLOTE; model the radiative transfer in Earth's ocean and atmosphere systems using HydroLight, libRadTran and 6S.

February 2020 - Present
Research Assistant, Network on Coastal, Oceans and Lake Optics Remote Sensing (NetCOLOR), Canada

- Assist in drafting the NetCOLOR Community-of-Practice Report 2 which addresses the reliability and accuracy of aquatic optical satellite products over Canadian waters.
- Match Canada-wise in-situ water-quality data with moderate-resolution ocean-colour products from MODIS, VIIRS and OLCI; plot graphs and maps and calculate statistical correlations in R and ArcGIS.

November 2021 - November 2021
Field Technician, Fluvial Systems Research Inc., Vancouver, Canada

- Mapped water depth in the Rupert River and the Pontax River in Waskaganish, Quebec using a single-beam echo sounder to support the ecosystem modelling of Walleye-fish habitats.
- Collected photogrammetry data for modelling fluvial sediment-size distribution.

Selected Scholarships and Awards

2021-2025 PhD Admission Scholarship, University of Ottawa
2021 Student Experience Fund, University of Ottawa
2021 BMO Financial Group Graduate Bursaries
2020-2021 Suzanne Gratton-Sarrazin Scholarship, University of Ottawa
2019 Gilles G. Patry Community Engagement Scholarship
2017-2019 Faculty of Science Dean's Honour List & Merit Scholarship, University of Ottawa

Training Certificates

Monitoring Coastal and Estuarine Water Quality Using Remote Sensing and In Situ Data (2021, December). NASA ARSET, online training.

International Fall School in Hydrographic Surveying (2021, November). Laval University, Quebec City, Canada.

Monitoring Coastal and Estuarine Water Quality: Transitioning from MODIS to VIIRS (2021, September). NASA ARSET, online training.

Google Earth Engine Mini-Course (2020, May). Carleton University.

Non-Refereed Publication

Wu, Y. (2020, September). Social Distancing: Easy in a Kayak Surrounded by Instruments – Collection of Remote Sensing Reflectance in Rivers. *Geography, Environment and Geomatics Newsletter*. https://arts.uottawa.ca/geography/geg-env-newsletter

Forthcoming Publications

Wu, Y., & Knudby, A. (In Progress). *Terrain-Adjusted Monte Carlo Simulation of the Adjacency Effect in Remote Sensing of Coastal and Inland Waters*. To be submitted to *Optics Express* in August 2022.

Devred, E., Costa, M., Forget, M.-H., Zeng, C., Bélanger, S., Massicotte, P., **Wu, Y**., Potvin, G., Laliberté, J., Li, J., Knudby, A., & Binding, C. (In Progress). *Aquatic Optical Satellite Products in Canada: Performance and Applications*. To be published on *the NetCOLOR Website* in December 2022.

Conference Presentations

Wu, Y., & Knudby, A. (2022, February 28). *Terrain-Adjusted Monte Carlo Simulation of the Adjacency Effect in Remote Sensing of Coastal and Inland Waters*. Ocean Sciences Meeting 2022, Online. https://osm2022.secure-platform.com/a/gallery/rounds/3/details/5093

Wu, Y. (2021, May 7). *Terrain-Adjusted Monte Carlo Simulation of the Adjacency Effect in Remote Sensing of Coastal and Inland Waters*. Geography, Environment and Geomatics Graduate Student Conference, University of Ottawa (online).

Wu, Y. (2020, September 2). *Retrieval of remote sensing reflectance in the South Nation River, Ottawa*. NetCOLOR Communities-of-Practice Workshop, University of Ottawa (online).

Wu, Y. (2020, February 24). *Satellite-derived water quality observations in inland waters*. Canadian Hydrographic Conference, Quebec City, Canada.